REMARKS/ARGUMENTS

The claims are 1 and 4-7. Claim 1 has been amended to incorporate the subject matter of claim 3. Accordingly, claim 3 has been canceled. In addition, claims 4 and 7 have been amended to improve their form. The Abstract has been replaced with an amended Abstract to improve its form as requested by the Examiner. Reconsideration is expressly requested.

The Examiner objected to the Abstract as being in improper form. In response, Applicant has amended the Abstract, which it is respectfully submitted overcomes the Examiner's objection on the basis of this informality.

The Examiner objected to claim 7 for failing to further limit the subject matter of the previous claim. In response, Applicant has amended claim 7 to recite that the synthesis furnace further includes a control device that takes the operating parameters of the synthesis furnace into account for adjusting the inclines, which it is respectfully submitted overcomes the Examiner's objection on the basis of this

informality as well.

Claim 4 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite in reciting both the range "between 0 and 10°" and a range of "between 0 and 5°". In response, Applicant has amended claim 4 to delete the range "between 0 and 5°." It is respectfully submitted that all currently pending claims fully comply with 35 U.S.C. 112, second paragraph, and Applicant respectfully requests that the rejection on this basis be withdrawn.

Claims 1 and 3-7 were rejected as being unpatentable over *Barnes U.S. Patent No. 2,598,879.* Essentially the Examiner's position was that *Barnes* discloses the synthesis furnace recited in the claims, except for the incline of the burner exit directions of the individual burners being different or increasing toward the outside toward the furnace wall, proceeding from the center of the furnace, or the incline angle being between the specified ranges, which were considered within the skill in the art in view of *Barnes*.

This rejection is respectfully traversed.

As set forth in claim 1 as amended, Applicant's invention provides a synthesis furnace having a furnace chamber surrounded by a circumferential furnace wall in which a plurality of burners disposed essentially in one plane with burner exit direction directed downward are disposed. At least the outer burners disposed in the region of the furnace wall have a burner exit direction that is inclined relative to the vertical, leading away from the center of the furnace, and a plurality of reaction tubes are disposed essentially vertically and parallel to one another. The reaction tubes are heated from the outside by means of the firing burners.

As recited in claim 1 as amended, the incline of the burner exit directions of the individual burner rows is different and the incline of the burner exit directions of the burner rows increases toward the outside, toward the furnace wall, proceeding

from the center of the furnace. In this way, the flame deflection of the outer burner rows toward the center of the furnace can be clearly reduced in a manner that is simple in terms of design and control technology. A significantly more uniform flow-off of the flue gases along the reaction tubes occurs, the heat transfer is improved, and the increased materials stress on the reaction tubes due to "hot spots" in the case of synthesis furnaces known previously is reduced so that the lifetime of the reaction tubes increases.

As recognized by the Examiner, *Barnes* is entirely silent with respect to the incline of the burner exit directions of the individual burners increasing toward the outside toward the furnace wall proceeding from the center of the furnace. Although the Examiner has taken the position that it would have been obvious to have changed the incline of the burner exit directions of the individual burners in *Barnes* to any suitable direction, it is respectfully submitted that the Examiner is incorrect. *Barnes* shows a technology that is quite different from that to which Applicant's synthesis furnace is directed and wants to heat the

walls of the oven so that there will be after the heating of the walls some sort of radiant heat from the walls (2) to the tubes (7).

In contrast, Applicant's synthesis furnace is directed to the problem that all the parallel reaction tubes 4 should be heated roughly in the same way. As the flames of the burners will be influenced by the flames of burners in the neighborhood, this influence will suck the burners in the neighborhood of the chamber walls to the center of the chamber which might cause some sort of temperature peak like that shown in FIG. 4 of Applicant's disclosure. With Applicant's synthesis furnace as recited in claim 1 as amended, this temperature peak is avoided by at least the incline of the burners in the outer regions of the chamber.

To further illustrate the difference of Applicant's synthesis furnace as recited in claim 1 as amended and the device of *Barnes*, attached hereto is a marked copy of Applicant's FIGS. 2a and 2b illustrating the difference between Applicant's synthesis furnace and that described by the prior art. In

addition, the Examiner attention is respectfully directed to Applicant's FIG. 4 which compares the heat flow density for the first row of tubes in a conventional system and in Applicant's inclined burner as recited in claim 1 as amended. Because the purpose of the *Barnes* heating apparatus is different from that contemplated by Applicant's synthesis furnace as recited in claim 1 as amended, it is respectfully submitted that one skilled in the art would have no reason to change the incline of the burner exit direction of the individual burners in *Barnes* as suggested by the Examiner because doing so would be contrary to *Barnes* purpose of heating the walls of the oven so that there will be after the heating some sort of radiant heat from the walls to the tubes.

In summary, claims 1, 4 and 7 have been amended and claim 3 has been canceled. The Abstract has also been amended. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully submitted,
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Enclosure:
Abstract of the Disclosure
Marked copy of FIGS. 2a and 2b

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on October 23, 2008.

Amy Klein